Appendix B: Detailed Assumptions
(Detailed assumptions used within the study)

Paragraph 3.2.3.1   Airport Improvement Plan Physical Airport Improvements

1. Maximum arrival capacity will increase at 16 of the 80 modeled airports during the 1996 to 2005 time frame.
2. Maximum arrival capacity will increase at 7 additional airports by 2010.
3. There are no additional AIP improvements anticipated between 2010 and 2015.

Paragraph 3.2.3.2   Air Traffic Control Procedural Improvements

1. All procedural improvements implemented by 2010 were considered to be in effect at 2015.

Paragraph 3.2.4   Fleet Mix

1. When forecasting the future fleet mix, the proportion of U.S. aircraft in the world fleet will remain constant.
2. The percentage of each aircraft type in each class of aircraft in the fleet mix will remain the same in the future.
3. 1996 fleet values were obtained by interpolating between the 1995 value and 2005 value assuming a constant increasing (or decreasing) rate between those years.

Paragraph 4.0   Data Preparation

1. The baseline scenario assumes growth in traffic, changes in fleet mix, and continuous support of airport and procedural improvements.
2. The enhanced CNS/ATM scenario includes the same assumptions used for the baseline scenario and the phasing in of new technologies and capabilities.

Paragraph 4.2   Assignment of Aircraft Types

1. New aircraft were added to the list by assuming that they would fly the same distribution of stage lengths as an aircraft in the same category.
2. New aircraft would fly the same number of legs per aircraft per day as similar aircraft.

Paragraph 4.5   Assignment of Trajectories - Enhanced Scenario

1. Aircraft performance constraints such as maximum thrusts, speed, and others were considered constraint variables in creating flight trajectories.
2. The SUA availability and the activities around SUA were held constant.
3. For 2005, flights flying less than 1,000 nmi had their distances reduced (direct routing) when operating at flight level 240 and above.

4. For 2005, flights flying greater than 1,000 nmi were optimized for minimum fuel when operating at flight level 240 and above.
5. For 2010 and 2015, flights flying less than 1,000 nmi had their distances reduced (direct routing) when operating at 15,000 feet and above.
6. For 2010 and 2015, flights flying greater than 1,000 nmi were optimized for minimum fuel when operating at 15,000 feet and above.

Paragraph 5.1.1.1   Aircraft with Performance Data

1. In order to compute the fuel consumed by a flight, the weight of the aircraft at landing was estimated by assuming a passenger load factor of 70% and landing with 45 minutes of reserve fuel.
2. The maximum number of passengers on board was an average across the industry.

Paragraph 5.1.1.2   Aircraft without Performance Data

1. The weight of the aircraft at landing was estimated from the maximum allowable takeoff weight for the aircraft.
2. It was assumed that there would be a constant specific impulse and that the aircraft operated at a roughly constant lift-to-drag.

Paragraph 5.2.1   Fuel Burn

1. For all flights arriving within the CONUS, the same formula was used except that the delay time was always set to zero.